

## SAT-Reasoning-Stereo Type Problems set 2

### Mean-Median

	Question	Answer
1	<p>If <math>y = 2x + 1</math>, what is the average (arithmetic mean) of <math>2x</math>, <math>2x</math>, <math>y</math>, and <math>3y</math>, in terms of <math>x</math>?</p> <p>(A) <math>2x</math>      (B) <math>2x + 1</math>      (C) <math>3x</math>            (D) <math>3x + 1</math>      (E) <math>3x + 2</math></p>	<p><b>D</b> The average of <math>2x</math>, <math>2x</math>, <math>y</math>, and <math>3y</math> is <math>(2x + 2x + y + 3y)/4 = (4x + 4y)/4 = x + y</math>. Substituting <math>2x + 1</math> for <math>y</math> gives <math>x + (2x + 1) = 3x + 1</math>.</p>
2	<p>The average (arithmetic mean) of seven integers is 11. If each of these integers is less than 20, then what is the least possible value of any one of these integers?</p> <p>(A) <math>-113</math>      (B) <math>-77</math>      (C) <math>-37</math>            (D) <math>-22</math>      (E) <math>0</math></p>	<p><b>C</b> If the average of seven integers is 11, their sum is <math>(7)(11) = 77</math>. If each of these integers is less than 20, then the greatest any can be is 19. The question doesn't say that the integers must be different, so if <math>x</math> is the least possible of these integers, <math>x + 19 + 19 + 19 + 19 + 19 + 19 = 77</math>.</p> <p>Simplify: <math>x + 114 = 77</math>            Subtract 114: <math>x = -37</math></p>
3	<p>The average (arithmetic mean) of two numbers is <math>z</math>. If one of the two numbers is <math>x</math>, what is the value of the other number in terms of <math>x</math> and <math>z</math>?</p> <p>(A) <math>z - x</math>      (B) <math>x - z</math>      (C) <math>2z - x</math>            (D) <math>x - 2z</math>      (E) <math>\frac{x+z}{2}</math></p>	<p><b>C</b> Call the number you are looking for <math>y</math>. The average of <math>x</math> and <math>y</math> is <math>z</math>, so set up the equation and solve:</p> $(x + y)/2 = z$ <p>Multiply by 2: <math>x + y = 2z</math>            Subtract <math>x</math>: <math>y = 2z - x</math></p>
4	<p>The average (arithmetic mean) of three numbers is 50. If two of the numbers are 35 and 50, what is the third number?</p> <p>(A) 45            (B) 50            (C) 55            (D) 60            (E) 65</p>	<p><b>E</b> If the average of three numbers is 50, then their sum must be <math>3(50) = 150</math>. If two of the numbers are 35 and 50, then the third is <math>150 - 35 - 50 = 65</math></p>
5	<p>The average (arithmetic mean) of <math>x</math>, 2, 6, and 10 is 8. What is the <u>median</u> of <math>x</math>, 2, 6, and 10?</p>	$\frac{(x+2+6+10)}{4} = 8, \text{ so } x+2+6+10 = 32$ <p>Simplify: <math>x + 18 = 32</math>            Subtract 18: <math>x = 14</math>            So the numbers are 2, 6, 10, and 14. The median is the average of the two middle numbers: <math>\frac{(6+10)}{2} = 8</math>.</p>